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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/762,075	01/21/2004	Joon-seo Son	90066.000371/FS18851US	4595

7590 12/10/2004
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EXAMINER

MAGEE, THOMAS J

ART UNIT	PAPER NUMBER
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2811

DATE MAILED: 12/10/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/762,075	Applicant(s) SON ET AL.	
	Examiner Thomas J. Magee	Art Unit 2811	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-9 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-9 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>01202003</u> | 6) <input type="checkbox"/> Other: ____ |

DETAILED ACTION

Claim Rejections – 35 U.S.C. 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1, 2, 5 and 6 are rejected under 35 U.S.C. 102(b) as being anticipated by Gagnon (US 5,859,387).

3. Regarding Claim 1, Gagnon discloses a semiconductor package (8) (Figure 1) in which a lead frame pad (22) to which a semiconductor die (32) is attached and inner leads electrically connected (at 24,14) to the lead frame pad are covered by a molded housing (See Figure 1), and outer leads (12,14,16) extending from the inner leads protrude from a side surface of the molded housing to the outside,

wherein the outer leads include a first outer lead (14) disposed in a central portion of the molded housing, and second (16) and third (12) outer leads respectively disposed in right and left portions of the first outer lead,

wherein the second and third outer leads (12,14) each have bent portions in portions where they are adjacent to the side surface of the molded housing, the bent portions protruding to increase a space between the first outer lead and the bent portions in the molded housing,

wherein at least one of the bent portions of the second and third outer leads is covered by an extended portion (face inclined at an angle) of the molded housing.

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4. Regarding Claims 2 and 6, Gagnon discloses a semiconductor package wherein a portion where the first outer lead is adjacent to the side surface of the molded housing is covered by the extended portion (face inclined at an angle) of the molded housing (Figure 1).

5. Regarding Claim 5, Gagnon discloses a semiconductor package (8) (Figure 1) in which a lead frame pad (22) to which a semiconductor die (32) is attached and inner leads electrically connected (at 24,14) to the lead frame pad are covered by a molded housing (See Figure 1), and outer leads (12,14,16) extending from the inner leads protrude from a side surface of the molded housing to the outside,

wherein the outer leads include a first outer lead (14) disposed in a central portion of the molded housing, and second (16) and third (12) outer leads respectively disposed in right and left portions of the first outer lead,

wherein the second and third outer leads each include inclinations in which a distance between the first outer lead and the inclinations becomes larger as a distance between the inclinations of the side surface of the molded housing becomes smaller,

wherein at least one of the bent portions of the second and third outer leads is covered by an extended portion (face inclined at an angle) of the molded housing.

Claim Rejections – 35 U.S.C. 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office Action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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7. Claims 3 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gagnon, as applied to Claims 1, 2, 5, and 6.

8. Regarding Claims 3 and 7, Gagnon discloses a semiconductor package wherein the width of the bond pad (24) adjacent to the third lead (12) is 10 mils (Figure 3), but does not disclose that the distance between a surface of the molded housing covering a portion of the first outer lead (14) and a surface of the molded housing covering at least one of the bent portions of the third lead is 1 mm or more. However, the placement of leads is routinely adjusted or optimized in the art to provide the minimum of interference between adjacent leads. It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the separation distance within the range as claimed in order to form a package of increased reliability.

9. Claims 4, 8, and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gagnon, as applied to Claims 1, 2, 5, and 6, and further in view of Admitted Prior Art of the Instant Application.

10. Regarding Claims 4 and 8, Gagnon does not disclose the presence of a depression which is depressed toward a body of the molded housing and formed on at least one of a surface of the molded housing between the first outer lead and the second outer lead and a surface of the molded housing between the first outer lead and the third outer lead. However, in the Description of the Related Art section of the Instant Application (p. 2, lines 19 – 26) (Figure 4) it is disclosed that depressions are present between the “first” (46) and “third” (45) leads and the first and second (47) with the depression oriented toward the body. It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the prior art disclosures

of the Instant Application with Gagnon to permit the application of higher voltages.

11. Regarding Claim 9, Gagnon does not disclose a semiconductor package, wherein at least one of the inclinations of the second and third outer leads includes a portion which is perpendicular to a surface of the molded housing and a flat portion, which is larger than a thickness of the molded housing covering the inclinations in a boundary between the inclinations and the molded housing.

In the Description of the Related Art section of the Instant Application (Figure 4) it is disclosed that the inclinations of the second and third outer leads (47,45) include a portion perpendicular to a mold surface (next to body) and a flat portion (along 48). It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the prior art disclosures of the Instant Application with Gagnon to permit the application of higher voltages.

Further, Gagnon does not disclose that a flat portion of the inclination is larger than the thickness of the molded housing covering the inclinations in a boundary region between the inclinations and housing. However, it is routine in the art to vary the thickness of the package with covering regions to optimize efficiency and heat dissipation. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate a package of the claimed dimensions to form an efficient package structure.

Conclusions

12. Any inquiry concerning this communication or earlier communications from the Examiner should be directed to **Thomas Magee**, whose telephone number is **(571) 272**

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1658. The Examiner can normally be reached on Monday through Friday from 8:30AM to 5:00PM (EST). If attempts to reach the Examiner by telephone are unsuccessful, the examiner's supervisor, **Eddie Lee**, can be reached on **(571) 272-1732**. The fax number for the organization where this application or proceeding is assigned is **(703) 872-9306**.

A handwritten signature in black ink, appearing to read 'Eddie Lee', is positioned above the printed name and title.

**EDDIE LEE
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800**

Thomas Magee

November 29, 2004